Barcelona wants to naturalise the city

Urban greenery and biodiversity

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4.3 Measures implemented to set up a functional green infrastructure

In recent years, Barcelona City Council has worked on implementing measures in order to increase urban green spaces to mitigate the impact of climate change and adapt to it, in addition to ensuring there is a green infrastructure that promotes biodiversity and offers maximum ecosystem services to residents.

Stimulus of the urban green infrastructure

To achieve the targets set in terms of urban green spaces and biodiversity, the City Council has defined the Stimulus Programme for the City’s Urban Green Infrastructure, as part of which a range of measures have been proposed between 2017 and 2030 structured around four strategic lines, three lines of direct action and one instrumental line:

- Increasing the city's urban green infrastructure
- Improving the existing green infrastructure.
- Joint responsibility in caring for urban nature.

4.3.1 Increase in the city's green infrastructure

- Studying, planning and monitoring the green infrastructure

New green hub in Cristóbal de Moura. The redevelopment of this street will convert it into a green, traffic-calmed space with a landscaped central platform and a wooded area 26 m wide. In total, this will create 3,500 m² of green space.

Transformation of Avinguda Meridiana. The aim of this renovation work is to convert the avenue into a green promenade that prioritises pedestrians, cyclists and public transport and serves as a meeting space. It will add 58,000 m² of green space to the city.

Living roof terraces and green roofs

In 2015, Barcelona City Council published the Guide to Living Roof Terraces and Green Roofs, which seeks to serve as an instrument for promoting a reassessment of the roofs on city buildings and the use of these spaces by residents.

Green roof competition

Green roofs can include green spaces, urban allotments,
spaces for social use or rainwater harvesting systems, and they are compatible with the installation of renewable energy sources. In 2014, the City Council approved a government measure to promote living terraces and green roofs. Later, in 2015, around the project and working group on mosaic roofs that came out of the Barcelona Climate Commitment, Barcelona organised a call for tender to subsidise the creation of ten green roofs on residential buildings, teaching facilities, health facilities or buildings with other uses. All these projects have a strong environmental, social and landscaping impact.

Assigning spaces in disuse under the BUITS Plan

The first call for the BUITS Plan (Urban Voids with Territorial and Social Involvement) was organised in 2012. By means of this plan, the City Council allocates temporary use of municipal land sites in disuse to public non-profit entities or associations so they can carry out activities there. In 2015, the six successful projects put forward greenery-related proposals and of the 12 active locations from the first call, nine involve uses relating to urban farming.

ECOsolars programme

As part of the ECOsolars programme, empty plots are identified, classified and defined as spaces of opportunity capable of being restored, in some cases, as future green spaces. Urban plots with renaturalisation potential are identified, in other words, to promote biodiversity and recover existing native urban flora or strengthen flora by planting grass.

Green dividing walls and producers of energy

The Dividing Walls Plan provides for the installation of vertical gardens and the harnessing of renewable energy on the city’s dividing walls. Its objectives include renaturalisation and the promotion of biodiversity through non-colonising vegetable treatments and the creation of nests and spaces for protected birds.

Among the interventions performed, one worth particular mention is the Tarradellas vertical wall, comprising 250 m² of greenery on a dividing wall on the corner of Carrer de Berlín and Carrer del Marquès de Sentmenat, and the diving walls planned for Plaça de les Dones del 36 and the Muñoz Ramonet gardens.

4.3.2 Naturalisation of the city

Barcelona is committed to the naturalisation of its green spaces, in other words, converting them into habitats that promote natural processes and the natural entry of flora and fauna through ecological management, with a view to achieving a more complex vegetable structure and optimising ecosystem services.
In 2016, a project involving 22 naturalisation actions in green spaces spread across the entire city was launched. Other naturalisation actions have been taken, including the following:

**Eradication of glyphosate and reduction in phytosanitary treatments**

As part of the 2016 government measure to eradicate the use of glyphosate in green spaces and public roads in Barcelona, in 2017 no chemical herbicide was used in the management of natural plants and tests have been done with different alternative techniques. Based on this experience, the city has been mapped by type of space and the most suitable techniques.

**Sowing in tree pits**

The Municipal Institute for Parks and Gardens has launched a pilot test, as part of which flowering herbaceous plant have been planted in tree pits and this has been combined with the release of beneficial insects to control the pests and diseases that affect the trees, with a view to decreasing the use of phytosanitary products and converting them into a habitat for fauna. It is planned to continue this experience on account of the interesting results obtained.

**Naturalisation of ponds**

Of the more than 300 decorative fountains dotted around the city, some 40 have been naturalised. Thanks to actions to both manage ponds and lakes themselves and the surrounding area, these aquatic spaces have become rich, complex ecosystems.

**Areas of special interest for biodiversity**

The Parc de Joan Miró and Jardins de Valent Petit have been declared areas of special interest on account of their biodiversity. These spaces are beneficial to fauna (birds, butterflies and other animals), through a selection of plant species that offer feeding options and the creation of refuges.

**Changes in tree-pruning and lined tree management**

The 2017-2037 Tree Master Plan for Barcelona defines 50 actions to achieve its objectives, of which 31 have been launched. Of these, it is worth highlighting the planting of flowering and fruit trees that are of interest to fauna, a more careful approach to pruning with regard to flowering, fruiting and the fauna cycle, and the diversification of species.

**More sustainable decorative flora**

Planting flower groups that combine perennial plants, shrubs and bushes promotes biodiversity and makes a more ecological approach to management possible, as these plants have a much longer duration than traditional seasonal flower groups. Around 7,000 m² of new groups of ornamental flowers have been planted in flowerbeds and flower boxes.

**Installation of new biodiversity structures**

More than 80 new fauna structures (insect hotels, dry stone spirals with aromatic plans, piles of wood, nest...
boxes for bats, nests for hedgehogs, etc.) and 392 birds’ nests have been set up to provide refuge, food and facilitate the reproduction of urban fauna.

**Guide Best gardening practices in Barcelona**

In 2016, the Urban Ecology Department published *Best Gardening Practices in Barcelona: conserving and improving biodiversity*. This initiative is intended to serve as a technical instrument to spread the best practices that help to improve the condition of green spaces and thus collaborate in the development of flora and fauna.

### 4.3.3 “All hands to greenery” with residents

**Shared responsibility with city residents in caring for and extending greenery is essential. Their action, in both public and private spheres, has been a significant contribution.**

**“All hands to greenery”**

The aim of the “All hands to greenery” project is to activate green plots in the city on Council-owned land not in use. The project is intended to generate an opportunity for residents to temporarily find a new use for the empty plots across the city and to involve social players in their regeneration and revitalisation.

One of the project’s lines of action consists in offering municipal plots that have fallen into disuse to non-profit organisations so they can create a community allotment or garden they manage themselves and to promote activities related to greenery and caring for nature. To that end, a study has been carried out on vacant public plots in the consolidated urban fabric across the city where there are no plans to build anything or give them a permanent use in the short term.

**Community allotments**

In 1997, Barcelona set up the Network of Urban Allotments, targeting retirees, with different functions and involving different entities. Currently, there are 15 allotment sites spread around all the city’s districts.

**School allotments**

As part of the “More Sustainable Schools” programme, in which schools develop their sustainability plans, around 300 schools have allotments with learning spaces.

**Vertical gardens in schools**

Thanks to the agreement between the City Council’s Green Spaces and Biodiversity Department and “la Caixa” Welfare Projects, 14 schools now have vertical gardens. The “More Sustainable Schools” programme offers training and advice to construct these spaces.
Participation and dissemination activities

Various activities and events are organised in the city to draw the public closer to green spaces and biodiversity:

→ “Music in the parks”. Every year the city’s green spaces fill with music thanks to “Music in the Parks”. Since 2016, this has included guided tours to raise public awareness of the environmental and heritage values of the parks.

→ Environmental facilities. Fàbrica del Sol organises tours to discover the most unique aspects of parks and gardens with “The art of visiting a garden”, and to see how the seasons affect different green spaces, with “Seasonal sensations”. Sustainable gardening and ecological horticulture workshops (“Planting nature”) are also organised for everyone, with the aim of increasing greenery in the home.

→ “Let’s make way for greenery”. This advertising campaign seeks to raise public awareness and inform people of activities to increase the amount of greenery and naturalisation of green spaces that are being carried out in Barcelona. This campaign includes new signs to identify the activities.

4.3.4 Promoting a new zoo model in Barcelona

2018-2031 Strategic Zoo Plan

As a result of a participatory process, a new zoo model has been drawn up, along with the Strategic Plan that lays the foundations for Barcelona Zoo to become a global benchmark and, at the same time, a meeting point for research, conservation and the promotion of native, Iberian and Mediterranean fauna. The new zoo model proposed is the result of the commitment to animal welfare at the heart of all activities carried out. The conservation criteria defined entail the restructuring of the number of species currently housed to prioritise native fauna, those that are highly endangered in nature and those for which conservation plans are in place. The scientific approach will entail investing more in research and habitat conservation projects, in addition to stepping up educational aspects. This transformation will go hand in hand with the renovation of physical spaces. There will be a new layout, with new spaces and improvements to the other facilities.

The purpose of the project is for Barcelona Zoo to become a meeting point for research, conservation and the promotion of native, Iberian and Mediterranean fauna.

4.3.5 Monitoring and assessing greenery and biodiversity

“Green corridors” project

Since 2006, Barcelona has been working to promote a network of green corridors that connect the natural spaces of Collserola and the coast with green spaces in the urban fabric, facilitating the movement of species and the promotion of environmental services. The first green corridor is currently being rolled out, between Ciutadella and Collserola.

The intervention on Carrer de Pi i Margall, as part of the green corridor, provides an opportunity to extend the Parc de la Ciutadella – Serra de Collserola Natural Park axis. An executive project is currently being drawn up for Carrer de Pi i Margall.

Study of socio-environmental services in Barcelona’s green spaces

Barcelona City Council and Barcelona Regional have drawn up a study to define the ecosystem or socio-environmental services that provide residents with access to green spaces, which will help to design spaces in a way that optimises their use. The study encompassed 326 green spaces, including parks, gardens, historical gardens, city block interiors and some squares (those with a plant cover of more than 30% and 40% permeable soil).
Study of water-soil relationships

In 2013, a study was produced on water-soil relationships in the main landscaped areas of the city in order to identify the characteristics of the soils and water used to irrigate gardens. Based on the results obtained, recommendations have been made on aspects linked to improving the soil, irrigation and water management.

For example, the Sustainable Urban Drainage Systems (SUDS) Committee was set up in 2016, with a Barcelona City Council technical team, to define the parameters for contributing to the strategy for harnessing water resources in the city. The study included the compilation of SUDS experiences across Barcelona.

Improving tree soil and new developments

In 2016, a diagnosis was carried out on the soil improvement techniques used in designing and maintaining green areas and lined trees, establishing the most suitable techniques in each case, in order to preserve, identify and recover fertile, living and functional soils compatible with the planned uses and maintenance.

Study on invasive species in Barcelona and a proposal for alternative species

Gardening is one of the main ways in which invasive plants are introduced into the natural environment, so Barcelona City Council decided it was necessary to implement two lines of action: (i) the identification of invasive species and the proposed use of alternative species with prevention in mind, and (ii) the management and potential eradication of invasive species. As a result of the former, this study was published in 2014.

Barcelona Breeding Bird Atlas

There are 83 species of birds living in Barcelona, according to the Barcelona Breeding Bird Atlas. The Atlas, created in collaboration with the Catalan Institute of Ornithology, the University of Barcelona and Barcelona Zoo, stands out for its detailed fieldwork.

The common phylum (Pittosporum tobira) is an invasive plant that is cultivated in gardening due to its large ductility.
In order to increase the green surface area in the city and naturalise green spaces to promote biodiversity and optimise the ecosystem services that they provide, a key factor in mitigating and adapting to climate change, Barcelona City Council has a variety of strategic plans in place.

**2017-2037 Tree Master Plan**

This Plan, approved in 2017, is the strategic document that guides municipal action in planning, managing and conserving all the trees in the city. It features 50 actions divided into 10 strategic lines to achieve the targets set out for 2037:

- Increase the city’s tree cover by 5%, ensuring that 30% of the city’s surface area is covered by trees.
- Ensure 40% of tree species are adapted to climate change.
- Achieve a biodiverse tree heritage in which no single tree species accounts for more than 15% of the total population.
- Provide the general public with all the information on the characteristics of each tree and the services it provides.
- Ensure that the children in all Barcelona’s primary schools appreciate and can identify the trees in their neighbourhood.

**2017-2030 Programme to Promote the City’s Urban Green Infrastructure**

This measure forms part of the 2020 Greenery and Biodiversity Plan, which establishes the objective of achieving a green infrastructure that offers maximum ecosystem services. It proposes measures to intensify the generation and naturalisation of green spaces and specifically defines the spaces where this will take place up to 2019.

Parc de la Ciutadella.
Conservation of natural spaces

Barcelona has three natural spaces of special interest with regard to biodiversity: the Montjuïc cliffs, Rec Comtal and Tres Turons. These three areas are dry grasslands, which are particularly interesting habitats in terms of the biodiversity of flora and fauna. To preserve these open spaces, their closure due to the sudden or manufactured growth of woody species must be prevented.

### MAIN MEASURES OF THE PROGRAMME TO PROMOTE THE CITY’S URBAN GREEN INFRASTRUCTURE

#### Increased greenery

The six actions established in the first strategic line (creating green spaces, recovering city block interiors, temporarily landscaping of empty plots, interventions in public places, and greening roofs, walls and dividing walls) will enable the green surface area to be increased by 44 ha between 2015 and 2019, and achieve 165 ha between 2015 and 2030.

<table>
<thead>
<tr>
<th>Increased greenery (m²)</th>
<th>2015-2016</th>
<th>2017-2019</th>
<th>2020-2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action 1.1. Creation of green spaces</td>
<td>74,602,24</td>
<td>138,710</td>
<td>833,238</td>
</tr>
<tr>
<td>Action 1.2. Recovery of city block interiors</td>
<td>11,816,41</td>
<td>38,237,11</td>
<td>8,800</td>
</tr>
<tr>
<td>Action 1.3. Temporary landscaping of vacant plots</td>
<td>15,946</td>
<td>16,754,16</td>
<td>30,800</td>
</tr>
<tr>
<td>Action 1.4. Interventions in public places</td>
<td>32,760,46</td>
<td>106,060,46</td>
<td>304,700</td>
</tr>
<tr>
<td>Action 1.5. Greening roofs</td>
<td>-</td>
<td>5,431</td>
<td>22,000</td>
</tr>
<tr>
<td>Action 1.6. Greening walls and dividing walls</td>
<td>606,3</td>
<td>3,232</td>
<td>12,100</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>13,57 ha</strong></td>
<td><strong>30,84 ha</strong></td>
<td><strong>121,16 ha</strong></td>
</tr>
<tr>
<td><strong>Total new green surface area</strong></td>
<td><strong>13,57 ha</strong></td>
<td><strong>44,41 ha</strong></td>
<td><strong>165,57 ha</strong></td>
</tr>
</tbody>
</table>

#### Increasing the biomass of green spaces

The city’s green spaces, in particular its parks and gardens, and spaces such as Plaça dels Països Catalans, Plaça Joan Peiró and Moll de la Fusta, have the potential to increase the density of plant life. To do so, plant species will be selected that, a priori, are less vulnerable to climate change, and trees and bushes will be diversified in terms of species, appearance and height, in order to achieve vertical and horizontal continuity.

#### Conservation of natural spaces

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Civic co-responsibility for taking care of urban nature

There are currently public and private space in the city that are in a temporary state of abandonment or lack of management. As a solution, the City Council wants to explore the urban custody system by transferring municipal spaces to social and community organisations so they can occupy them.

Regarding the private sphere, the Council intends to promote landscaping terraces, balconies, roofs and interior patios, installing green roofs and walls in new buildings and creating private allotments, by providing grants, advice and follow-up.

New greenery model for the city

One of the actions included in this measure is to plan Barcelona’s green infrastructure as a system, which includes the green corridor network and is in line with the socio-environmental services. To that end, work is under way to create a new greenery model for the city and being coordinated with a review of the Urban Development Master Plan (PDU).

Promoting green corridors

The final push to the green corridor for the Parc de la Ciutadella-Serra de Collserola Natural Park axis is gradually taking shape in the new Carrer de Pi i Margall development.

Harnessing water resources

The city has alternative water resources (fountains, wells, groundwater, Rec Comtal, etc.) that are used for irrigation and other public uses. As the priority for these resources is to increase the urban greenery, their quality must be preserved and their sustainability in quantitative terms must be guaranteed. For that reason, the Alternative Water Resources Plan for has been updated (see Section 9.3.2, “Harnessing alternative water resources”).

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Barcelona, a city committed to the environment - Environment report 2018

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